

**REMARKS**

Claim 6 has been cancelled, without prejudice.

Claim 1 has been amended, *inter alia*, to incorporate the subject matter of now cancelled dependent claim 6. Claim 1 now recites “[a] method of optimizing performance of a fermentation process involving a complex nutrient mixture comprising:

- (a) calculating a feed concentration of the complex nutrients;
- (b) periodically stopping a supply of each nutrient in a complex nutrient mixture to a culture of microorganisms until a metabolic activity of the microorganisms decreases by a preset percentage; and
- (c) adjusting the amount of each nutrient supplied to the microorganism with an optimization routine, wherein a ratio between the feed concentration of the complex nutrients and the total quantity of the complex nutrients is treated as a separate control variable but is adjusted simultaneously.” Support for these amendments is found in original claims 1 and 6 and in the specification at, for example, page 1, para. [0002].

See *In re Gardner*, 177 USPQ 396, 397 (CCPA 1973) and MPEP §§ 608.01 (o) and (l).

Claim 4 has been amended to recite “[a] method according to claim 1, wherein the optimization routine comprises:

- (a) generating a flow chart with a co-ordination controller for generating control variables using a negative-pulse response technique;
- (b) generating response times; and
- (c) using the response times to form an input variable  $Q_{sens}$ , which is obtained by dividing an actual pulse response time  $\Delta t_i$  by a pulse response time  $\Delta t_{i-1}$  in a previous cycle, measured with a respective other complex nutrient.” Support for these

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amendments is found in original claim 4 and in the specification at, for example, page 8, para. [0020] and page 10, para. [0025]. (*Id.*).

**PRIORITY:**

We thank the Examiner for his acknowledgment "of applicant's claim for foreign priority based on an application filed in the European Patent Office (EPO) on 10/31/2000", i.e., EPO Application No. 00123710.6. (Paper No. 02062006 at 2).

The Examiner stated, however, "that applicant has not filed a certified copy of the application as required by 35 U.S.C. 119(b)." (*Id.*).

It is respectfully submitted that the Examiner is mistaken.

In response, we note that the application transmittal papers for the above-referenced application filed on October 30, 2001 indicated that a certified copy of the foreign priority document was enclosed:

- [x] Priority is hereby claimed under 35 USC § 119 based on Appln. No. 00123710.6 filed **October 31, 2000 in Europe**.
- a. [x] A certified copy of the priority document is enclosed.

(See Transmittal for filing utility patent application at p. 2). Further, we attach as Exhibit 1 our PTO stamped postcard evidencing receipt by the Patent Office of a certified copy of the priority document filed on October 30, 2001. See MPEP § 503 ("A postcard receipt which itemizes and properly identifies the items which are being filed serves as *prima facie* evidence of receipt in the USPTO of all the items listed thereon on the date stamped thereon by the USPTO.").

Therefore, it is submitted that Applicants complied with all rules regarding priority under 35 U.S.C. § 119. For the reasons set forth above, it is requested that the Examiner confirm on the record that the claim to benefit has been perfected.

**OBJECTION:**

The Examiner objected to claim 6. In making the objection, the Examiner asserted that “[c]laim 6 is grammatically incorrect, and should recite ‘wherein a ratio...is treated as a separate control variable but is adjusted simultaneously.’” (Paper No. 02062006 at 3).

Claim 6 has been cancelled, without prejudice, and therefore moots this rejection. We note, however, that the subject matter of claim 6 has been incorporated into claim 1. As suggested by the Examiner, the grammatical error noted by the Examiner has been fixed.

**§112, SECOND PARAGRAPH REJECTION:**

Claims 1, 3, 4, and 6-8 have been rejected under 35 U.S.C. §112, second paragraph. (Paper No. 02062006 at 3).

In making the rejection, the Examiner asserted that claim 1 “recites a ‘new feed concentration’ in line 6,” and “[t]he term ‘new’ feed concentration implies that an initial feed concentration was supplied or determined previously, however no such step limitation is recited in the claims.” (*Id.*). The Examiner further asserted that claim 1 “recites a ‘method of optimizing performance of a bioprocess’ in the preamble,” and “[i]t is unclear in what way the steps of the instant claim achieve the purpose of the preamble, as it is unclear where a bioprocess’ performance is optimized.” (*Id.*). The Examiner also asserted that claim 1 “recites the limitation ‘periodically and alternately’ in line 3,” and “[i]t is unclear what ‘alternates.’” (*Id.*).

With a view towards furthering prosecution, claim 1 has been amended to remove the term "new" and now recites "a feed concentration." Also, the preamble has been amended to change the term "bioprocess" to "fermentation process" and the phrase "and alternatively" has also been cancelled. In view of the foregoing amendments, the rejection of claim 1 is rendered moot. Accordingly, withdrawal of the rejection is respectfully requested.

The Examiner asserted, with respect to claim 4, that the limitation "a co-ordination controller" is unclear because it "is unclear exactly what elements are being 'co-ordinated' by this controller ..." and the limitation "the input variable" has "insufficient antecedent basis" and "is unclear as to what this input variable represents and what this input variable is input to." (*Id.*).

With a view towards furthering prosecution, steps (a) and (c) of claim 4 have been amended to recite "a co-ordination controller for generating control variables using a negative-pulse response technique" and "an input variable  $Q_{sens}$ , which is obtained by dividing an actual pulse response time  $\Delta t_i$  by a pulse response time  $\Delta t_{i-1}$  in a previous cycle, measured with a respective other complex nutrient." In view of the foregoing amendments, the rejection of claim 4 is rendered moot. Accordingly, withdrawal of the rejection is respectfully requested.

With respect to claim 6, the Examiner asserted that the limitation "a ratio ... are treated as separate control variables" is unclear because "it is unclear exactly what elements are being treated as separate control variables" and there is "insufficient antecedent basis" for the limitation "the feed concentrations." (*Id.*).

Claim 6 has been cancelled, without prejudice, which renders the rejection moot. As noted above, however, the subject matter of claim 6 has been incorporated

into claim 1. Claim 1 now recites "... wherein a ratio between the feed concentration of the complex nutrients and the total quantity of the complex nutrients is treated as a separate control variable but is adjusted simultaneously." In view of the foregoing, the alleged infirmities in the language used in claim 6 have been remedied in the claim 1 amendments.

**REJECTIONS UNDER 35 USC § 102:**

Claims 1, 3, 4, and 7-8 were rejected under 35 USC § 102(b) as anticipated by Fleury *et al.*, "Modeling And Control Strategies For The Transformation Of D-Sorbitol To L-Sorbose On A Laboratory Bioreactor," Advances in Bioprocess Engineering, Netherlands: Kluver Academic Publishers, pp. 313-320 (1994) ("Fleury"). (Paper No. 02062006 at 5).

For the reasons set forth below, the rejection, has been rendered moot.

Fleury discloses "the formulation and adjustment of a mathematical model and the design of a control strategy for a fermentation process, the bioxidation of D-sorbitol to L-sorbose ...." (Page 313, para. 1). The "procedure to convert glucose into L-ascorbic acid is a combination of several stages of chemical reactions, physico-chemical operations and a single biochemical step - the microbial oxidation of D-sorbitol to L-sorbose - performed by a bacterial strain of *Gluconobacter oxydans*." (*Id.*) "The culture media used ... was prepared with sorbitol, yeast extract and salts." (Page 314, para. 1).

In making the rejection, the Examiner asserted that Fleury discloses "the following aspects of the instantly claimed invention:"

- Control system with multiple feed pumps supplying nutrients ( $s_1$ ,  $s_2$ ,  $H_2O$ ) to a microorganism [Fig. 2], as in instant claim 1(a).

- Implementation of a delay before starting control actions to allow a minimal convergence of the state observer to values near the "real" state vector [p.318, col. 2, lines 28-34 and Fig. 4], which correlates to "periodically and alternately stopping a supply of each nutrient...until a metabolic activity of the microorganism decreases by a preset percentage" as in instant claim 1(a). Note the state vector is a representation of product and nutrient concentrations represented as percentages (Fig. 4).
- Calculation of new feed concentration values [Table 3], as in instant claim 1(b).
- Use of a non-linear model to design a control strategy for nutrient delivery [p.317, col.1, lines 21-32], which correlates to an optimization routine as in instant claim 1(c).
- Use of sorbitol and yeast extract ( $s_1, s_2$ ) [p.314], which correlates to a complex nutrient mixture with different nutrients as in instant claim 3.
- Use of the microorganism *Gluconobacter oxydans* (i.e. *suboxydans* [p.313, col. 1, paragraph 1], as in instant claim 7.
- Microbial oxidation of D-sorbitol to L-sorbose [p.313, col. 1, paragraph 1], as in instant claim 8.
- Optimization routine generating a flow chart using negative-pulse response [p.319, col. 2, Fig. 5], as in instant claim 4(a).
- Time-variant flow charts of controlled and non-controlled systems with demonstrating negative-pulse response (Fig. 4 and Fig. 5), as in instant claim 4(a), (b).
- Control actions involving feed pumps using time values [Fig. 1], as in instant claim 4(c).

(Paper No. 02062006 at 5-6).

As is well settled, anticipation requires "identity of invention." *Glaverbel Societe Anonyme v. Northlake Mktg. & Supply*, 33 USPQ2d 1496, 1498 (Fed. Cir. 1995). Each and every element recited in a claim must be found in a single prior art reference and arranged as in the claim. *In re Marshall*, 198 USPQ 344, 346 (CCPA 1978); *Lindemann Maschinenfabrik GMBH v. American Hoist and Derrick Co.*, 221 USPQ 481, 485 (Fed. Cir 1984). "Moreover, it is incumbent upon the Examiner to **identify where each and every facet** of the claimed invention is disclosed in the

applied reference." *Ex parte Levy*, 17 USPQ2d 1461, 1462 (BPAI 1990). The Examiner is required to point to the disclosure in the reference "**by page and line**" upon which the claim allegedly reads. *Chiong v. Roland*, 17 USPQ2d 1541, 1543 (BPAI 1990).

With a view towards furthering prosecution, we note that the subject matter of *non-rejected*, now cancelled, claim 6 has been incorporated into claim 1, from which claims 3, 4, 7, and 8 either directly or indirectly depend.

In particular, claim 1 now recites "[a] method of optimizing performance of a fermentation process involving a complex nutrient mixture comprising:

- (a) calculating a feed concentration of the complex nutrients;
- (b) periodically stopping a supply of each nutrient in a complex nutrient mixture to a culture of microorganisms until a metabolic activity of the microorganisms decreases by a preset percentage; and
- (c) adjusting the amount of each nutrient supplied to the microorganism with an optimization routine, wherein a ratio between the feed concentration of the complex nutrients and the total quantity of the complex nutrients is treated as a separate control variable but is adjusted simultaneously."

It is respectfully submitted that Fleury fails to disclose or suggest "a ratio between the feed concentration of the complex nutrients and the total quantity of the complex nutrients is treated as a separate control variable but is adjusted simultaneously" as recited in amended claim 1.

In sum, Fleury does not disclose each and every element of amended claims 1, 3, 4, 7, and 8. Accordingly, it is respectfully submitted that the rejection of claims 1, 3, 4, 7, and 8 has been rendered moot and should be withdrawn.

Claims 1, 3, and 4, were rejected under 35 USC § 102(a) as anticipated by Miskiewicz *et al.*, "A Fuzzy Logic Controller To Control Nutrient Dosage In A Fed-Batch Baker's Yeast Process," Biotechnology Letters, vol. 22, pp. 1685-1691 (2000) ("Miskiewicz"). (Paper No. 02062006 at 6).

For the reasons set forth below, the rejection, has been rendered moot.

Miskiewicz discloses "[a] fuzzy logic controller designed to control glucose feeding in a fed-batch baker's yeast process .... Feeding is carried out in portions and the controller determines the time at which glucose should be added and computes the size of the portion to provide the maximum glucose uptake rate. Moreover, the controller detects and prevents the occurrence of overdosage." (Abstract). The "fuzzy logic controller ... supervise[s] the inflow of glucose feed so as to provide a very high yield and a high specific growth rate of baker's yeast cultured in a laboratory-scale fermenter." (Page 1685, line 24 to page 1686, line 3).

In making the rejection, the Examiner asserted that Miskiewicz discloses "the following aspects of the instantly claimed invention:"

- Fragmented nutrient dosage [Fig. 7 and Fig. 8], which correlates to periodically and alternately stopping a nutrient supply as in instant claim 1 (a).
- Portion-wise complex nutrient dosage to a microorganism culture when a dissolved O<sub>2</sub> concentration reactor changes by a set value (45%) [p.1686, col. 2, lines 1-6], which correlates to instant claim 1(a).
- Calculation of consecutive nutrient dosage based on multiple inputs using a fuzzy logic controller [p.1686, col. 2, lines 24-26], which correlates to adjusting the amount of nutrient supplied as in instant claim 1(b).
- Use of a fuzzy logic controller to supervise nutrient feed inflow and provide optimum yield [p. 1685, col. 2, paragraph 2; and p.1686, col. 1, paragraph 1], which correlates to an optimization routine as in instant claim 1(c).

- Complex nutrient mixture containing more than one nutrient [p. 1686, col. 1, lines 9-14], as in instant claim 3.
- Fragmented nutrient dosage process controlled by a fuzzy logic controller demonstrating negative-pulse response [Fig. 8], which correlates to instant claim 4(a).
- Determination of nutrient size (i.e. pulse) and points in time at which the dosage of consecutive nutrient portions should be start [p.1691, col. 1, lines 4-9], which correlates to instant claim 4 (b), (c).
- Nutrient amounts and rates as inputs into fuzzy logic controller [p. 1686, col. 2, lines 11-24] and calculation of time of cycle [Fig. 2], which correlates to instant claim 4(c).

(Paper No. 02062006 at 6-7).

As stated above, anticipation requires “identity of invention.” *Glaverbel Societe Anonyme*, 33 USPQ2d at 1498. Each and every element recited in a claim must be found in a single prior art reference and arranged as in the claim. *Marshall*, 198 USPQ at 346; *Lindemann Maschinenfabrik GMBH*, 221 USPQ at 485. “Moreover, it is incumbent upon the Examiner to **identify where each and every facet** of the claimed invention is disclosed in the applied reference.” *Levy*, 17 USPQ2d at 1462. The Examiner is required to point to the disclosure in the reference “**by page and line**” upon which the claim allegedly reads. *Chiong*, 17 USPQ2d at 1543.

With a view towards furthering prosecution, we note again that the subject matter of *non-rejected*, now cancelled, claim 6 has been incorporated into claim 1, from which claims 3 and 4 directly depend.

Accordingly, Miskiewicz fails to disclose or suggest “a ratio between the feed concentration of the complex nutrients and the total quantity of the complex nutrients is treated as a separate control variable but is adjusted simultaneously” as recited in amended claim 1.

In sum, Miskiewicz does not disclose each and every element of claims 1, 3, and 4. Accordingly, it is respectfully submitted that the rejection of claims 1, 3, and 4 has been rendered moot and should be withdrawn.

**REJECTION UNDER 35 USC § 103:**

Claims 1, 3, 4, and 6-8 were rejected under 35 USC § 103 as being unpatentable over Kurokawa *et al.*, "Growth Characteristics In Fed-Batch Culture Of Hybridoma Cells With Control Of Glucose And Glutamine Concentrations," Biotechnology And Bioengineering, vol. 44, pages 95-103 (1994) ("Kurokawa") in view of Johnson *et al.*, U.S. Patent No. 6,792,336 ("Johnson") and Fleury. (Paper No. 02062006 at 8-9).

The rejection respectfully is traversed.

Kurokawa discloses "[a]n online system using HPLC [ ] developed for the measurement of glucose, glutamine, and lactate in a culture broth. Using the system, the glucose and glutamine concentrations were controlled simultaneously by an adaptive-control algorithm within the ranges of 0.2 to 2.0 and 0.1 to 0.6 g/L, respectively. When the glucose concentration was controlled at the low level of 0.2 g/L, the intracellular lactate dehydrogenase activity decreased by one-half and the lactate concentration by one-third, whereas the uptake rates of serine and glycine were about twice as high, compared with the amounts when the glucose concentration was controlled at 1.0 g/L." (Abstract). Figure 3 shows the results of the "[g]lucose concentration [ ] controlled at 0.2 g/l ... using the adaptive control strategy." (Page 98, lines 37-38). "Table II shows a comparison of LDH [Lactose Dehydrogenase] activities in cultures in which the carbon sources were controlled." (Page 100, lines 4-6).

Johnson discloses “[a]n inventive stochastic reinforcement, learning-based control system [ ] developed and applied to the supervision of uncharacterized, moderately thermophilic bacterial culture in a continuous stirred tank reactor (CSTR). The inventive system had as a process goal, e.g. to optimize the production of oxidized iron.” (Col. 3, lines 38-42). “The control system has the ability to select environmental set point conditions, maintain those set points, analyze system states, and to recognize and diagnose instrument faults for the operator.” (Col. 3, lines 44-47).

Fleury is summarized above.

In making the rejection, the Examiner asserted that Kurokawa discloses “the use of an adaptive control algorithm to simultaneously control glucose and glutamine concentrations (Abstract)” and Kurokawa discloses “the following aspects of the instantly claimed invention:”

- Positive, negative, and zero slope feed rates [Fig. 3], which correlates to alternately and periodically starting and stopping nutrient supply as in instant claim 1(a).
- On-line measuring and controlling system with multiple feed peristaltic pumps controlled by a computer [Fig. 1], which correlates to instant claim 1(a). Note: any computer controlled pump can be programmed to periodically and alternately stop nutrient supply.
- Simultaneous supply of at least complex nutrient mixtures [p.96, col. 2, lines 1-3], as in instant claims 1(a) and 3.
- Adjusting feed rates to decrease inhibitory metabolite activity by a certain concentration [p.99, col. 1, paragraph 2], which correlates to instant claim 1(a).
- Adaptive control algorithm for correcting the feed rate from real-time data at every sampling time [p.98, col. 2, lines 29-32], which correlates to instant claims 1(b) and (c).
- Generation of time-variant flow charts and response times based on algorithms [Fig. 2 and 3], as in instant claim 4(a) and (b).
- Using response times (i.e. sampling times) as input variables [p.97, Equation (7)], as in instant claim 4(c).

- Separate and simultaneous adjust of nutrient feed rates and concentrations [Fig. 3(b) and (c)] and [Table II], which correlates to instant claim 6.

(Paper No. 02062006 at 8-9).

The Examiner acknowledged, however, that Kurokawa “do[es] not specifically teach the use of a ‘microorganism’, but do[es] suggest the use of such control models with fermentation processes involving microorganisms [p.95, col. 2, paragraph 31.]” (*Id.* at 9).

To fill the acknowledged gap, the Examiner relied on Johnson for “teach[ing] the use of learning-based control systems using multiple or difficult to characterize parameters [Abstract]. *Johnson et al.* further teach: (i) fuzzy logic computer-controlled pumps for nutrient feeds [31]; (ii) a culture of minerals-processing microorganisms [9]; and (iii) the optimization of nutrient flow rates for the newly selected set points [29].” (*Id.*).

The Examiner further relied on Fleury for “teach[ing] a multi-feed system and modeling and control strategies for the transformation of D-sorbitol to L-Sorbose using the microorganism *Gluconobacter oxydans* (i.e. *suboxydans*) [p.313, col. 1, paragraph I], ....” (*Id.*).

The Examiner then contended that “it would have been obvious to someone of ordinary skill in the art at the time of the instant invention to practice the invention of *Kurokawa et al.* with the use of the fuzzy logic control system of *Johnson et al.* and the microorganism *Gluconobacter oxydans* as taught by *Fleury et al.*, where the motivation would have been to increase productivity by developing an optimized process which adapts to the metabolic response of an industrially useful microorganism

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while varying multiple control parameters simultaneously [Johnson *et al.*, (18),(31)], resulting in the practice of the instant claimed invention with a reasonable expectation of success." (*Id.*).

With a view towards furthering prosecution, we note that the subject matter of, now cancelled, claim 6 has been incorporated into claim 1, from which claims 3, 4, 7, and 8 either directly or indirectly depend.

It is well settled that the Examiner bears the burden to set forth a *prima facie* case of unpatentability. *In re Glaug*, 62 USPQ2d 1151, 1152 (Fed. Cir. 2002); *In re Oetiker*, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992); and *In re Piasecki*, 223 USPQ 785, 788 (Fed. Cir. 1984). If the PTO fails to meet its burden, then the applicant is entitled to a patent. *In re Glaug*, 62 USPQ2d at 1152.

When patentability turns on the question of obviousness, as here, the search for and analysis of the prior art by the PTO must include evidence relevant to the finding of whether there is a teaching, motivation, or suggestion to select and combine the documents relied on by the Examiner as evidence of obviousness. *McGinley v. Franklin Sports*, 60 USPQ2d 1001, 1008 (Fed. Cir. 2001). The factual inquiry whether to combine documents must be thorough and searching. And, as is well settled, the teaching, motivation, or suggestion to combine "**must be based on objective evidence of record.**" *In re Lee*, 61 USPQ2d 1430, 1433 (Fed. Cir. 2002).

The rejection is devoid of any evidence - or even argument - in support of the proposed combination. All that is there is a conclusory statement that "it would have been obvious to someone of ordinary skill." What the rejection should have done, but did not, was to explain on the record *why* one skilled in this art would modify the

disclosure of Kurokawa using Johnson and Feury to arrive at the claimed method. As is well settled, an Examiner cannot establish obviousness by locating references which describe various aspects of a patent applicant's invention without also providing evidence of the motivating force which would impel one skilled in the art to do what the patent applicant has done. *Ex parte Levingood*, 28 USPQ2d 1300, 1301-02 (BPAI 1993). Thus, the rejection is legally deficient and should be withdrawn for this reason alone.

Notwithstanding the legally insufficient nature of the rejection, we note that the rejection is also factually insufficient to support a rejection under § 103(a). In doing so we observe that obviousness cannot be based upon speculation, nor can obviousness be based upon possibilities or probabilities. Obviousness **must** be based upon facts, "cold hard facts." *In re Freed*, 165 USPQ 570, 571-72 (CCPA 1970). When a conclusion of obviousness is not based upon facts, it cannot stand. *Ex parte Saceman*, 27 USPQ2d 1472, 1474 (BPAI 1993). Further, "to establish *prima facie* obviousness of a claimed invention, all claim limitations must be taught or suggested by the prior art." MPEP § 2143.03 citing *In re Royka*, 180 USPQ 580 (CCPA 1974).

Assuming *arguendo* that Kurokawa is properly combinable with Johnson and Fleury, which it is not, such a combination does not produce amended claim 1, from which claims 3, 4, 7, and 8 either directly or indirectly depend. As noted above, Kurokawa discloses "[a]n online system using HPLC [ ] developed for the measurement of glucose, glutamine, and lactate in a culture broth." (Abstract). Figure 3 of Kurokawa shows the results of the "[g]lucose concentration [ ] controlled at 0.2 g/l ... using [an] adaptive control strategy." (Page 98, lines 37-38). "Table II shows a comparison of LDH [Lactose Dehydrogenase] activities in cultures in which the carbon sources were

controlled." (Page 100, lines 4-6). The rejection does not - and cannot - identify where in Kurokawa "a ratio between the feed concentration of the complex nutrients and the total quantity of the complex nutrients is treated as a separate control variable but is adjusted simultaneously" as recited by amended claim 1.

The Examiner summarily asserted that Kurokawa discloses "[s]eparate and simultaneous adjust[ment] of nutrient feed rates and concentrations [Fig. 3(b) and (c)] and [Table II], which correlates to instant claim 6." (Paper No. 02062006 at 9) (emphasis added). With all due respect, whether or not the disclosure of a reference "correlates" to a claim is irrelevant as a matter of law under § 103. The issue is whether what the reference discloses would have suggested or would have led one to proceed as claimed when the claim is considered as a whole. Thus, because the Examiner employed the wrong legal standard for determining obviousness, the rejection should be withdrawn for this reason as well.

It is respectfully submitted that Kurokawa does not disclose or suggest the elements of claim 6 (now incorporated into claim 1). Unfortunately for the Examiner, neither Johnson nor Fleury fill this factual gap. As discussed above, Johnson discloses a "control system [that] has the ability to select environmental set point conditions, maintain those set points, analyze system states, and to recognize and diagnose instrument faults for the operator" in order "to optimize the production of oxidized iron," which is not even close to the method of optimizing performance of a fermentation process involving a complex nutrient mixture as recited in amended claim 1. (Col. 3, lines 35-47). Fleury, on the other hand, as implicitly acknowledged by the Examiner (*i.e.*, claim 6 was not rejected under §102 [Paper 02062006 at 5-6]), fails to disclose "a ratio between the feed concentration of the complex nutrients and the total quantity of

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the complex nutrients is treated as a separate control variable but is adjusted simultaneously." Rather, Fleury focuses on the bioxidation of D-sorbitol to L-sorbose. Thus, the proposed combination falls short of filling the factual gap in Kurokawa. For this reason also, the rejection should be withdrawn.

In view of the foregoing, it is respectfully submitted that the rejection has been rendered moot. Accordingly, withdrawal of the rejection is respectfully requested.

For the foregoing reasons, favorable action on the merits, including entry of the amendments, withdrawal of the objection and rejections, and allowance of all the claims, respectfully are requested. If the Examiner has any questions regarding this paper, please contact the undersigned attorney.

I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Mail Stop Amendment, Commissioner for Patents, P.O. Box. 1450 Alexandria, VA 22313-1450, on August 15, 2006.

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Docket No. 20780/124164

In re Patent Application of:  
Mads GRUENBERG et al.

Serial No.: Unassigned

Filed: Herewith

For: **OPTIMIZATION OF FERMENTATION PROCESSES**

Enclosed:

1. Certificate of Express Mailing (1 p)
2. Transmittal Letter (3 pp) in duplicate
3. Specification, Claims and Abstract (30 pp)
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5. One (1) Sheet of Drawings (FIG. 1)
6. Copy of Certified Priority Document EP 00123710.6
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